Entergy Nuclear Northeast
Indian Point Energy Center
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Fred Dacimo
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January 17, 2005

Re: Indian Point Units 2
Docket No. 50-247
NL-05-002

Document Control Desk
U.S. Nuclear Regulatory Commission
Mail Stop O-P1-17
Washington, DC 20555-0001

Subject: **Reactor Vessel Lower Head Inspection Results;**
Indian Point 2, Fall 2004 Refueling Outage (2R16)

Reference:
1) NRC Bulletin 2003-02, "Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity", dated August 21, 2003

2) Entergy letter to NRC dated November 13, 2003 (NL-03-178); "90-Day Response to NRC Bulletin 2003-02 Regarding Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity".

Dear Sir:

This letter provides the Reactor Vessel Lower Head Inspection Report (Attachment 1) for Indian Point 2 (IP2), in accordance with Requested Information Item (2) (Reference 1). The inspection was performed during refueling outage 2R16 that was completed on November 22, 2004. The inspection was performed in accordance with (Reference 2).

The inspection consisted of a visual examination of the lower head region adjacent to each bottom mounted instrumentation (BMI) penetration including the annulus region between the penetration and the Alloy 600 weld pad. The inspection also included an aging analysis on boron residue found on the lower head. Cleaning of the lower head penetrations annulus regions to remove this boron residue was implemented during 2R16.

Based on the results of this inspection, Entergy concludes that there is no evidence of leakage resulting from a breach of the lower head penetrations or the attaching j-groove weld (i.e. no popcorn-like evidence of boron deposits at the annulus between the penetration and the weld pad). The source of boron residue was concluded to be refueling cavity leakage during refueling operations. However, since the cleaning implemented during 2R16 was not as effective as

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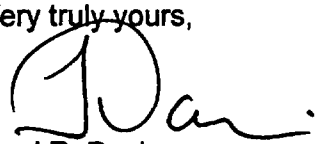
originally anticipated, IP2 will either (a) lower the head insulation package or remove individual panels during the next (2R17) refueling outage and perform additional cleaning of the lower head surface to remove the boron residue to provide an acceptable baseline to improve the effectiveness of future visual examinations, or (b) perform non-destructive testing of the BMI penetrations during the next (2R17) refueling outage, or (c) perform some combination of (a) and (b), or (d) utilize a mutually agreed method of verification between Entergy and the NRC utilizing new technology, should such technology become available between now and the next (2R17) refueling outage. Regardless of the option chosen, all 58 penetrations will be addressed.

Commitments made by Entergy contained in this letter are listed in Attachment 2 to this letter. If you have any questions, please contact Mr. Patric W. Conroy, Manager, Licensing at (914) 734-6668.

Very truly yours,



Fred R. Dacimo
Site Vice President
Indian Point Energy Center

Attachment 1 (Reactor Vessel Lower Head Inspection Results; Indian Point 2, Fall 2004 Refueling Outage (2R16))
Attachment 2 (Commitment For 2R17 in Reactor Vessel Lower Head Inspection Results; Indian Point 2, Fall 2004 Refueling Outage (2R16))

cc: see next page

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ATTACHMENT 1 TO NL-05-002

REACTOR VESSEL LOWER HEAD INSPECTION RESULTS;

INDIAN POINT 2, FALL 2004 REFUELING OUTAGE (2R16)

ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NO. 2
DOCKET NO. 50-247

REACTOR VESSEL LOWER HEAD INSPECTION RESULTS; INDIAN POINT 2, FALL 2004 REFUELING OUTAGE (2R16)

Item (2) of Bulletin 2003-02 requested that, within 60 days of plant restart following the next inspection of the RPV lower head penetrations, Licensees should submit to the NRC (1) a summary of the inspections performed, (2) the extent of the inspections, (3) the method used, (4) a description of the as-found condition of the lower head, (5) any findings of relevant indications of through wall leakage and (6) a summary of the disposition of any findings of boric acid deposits and any corrective actions taken as a result of indications found.

(1) Summary of inspections performed

During the recently completed 2R16 refueling outage, Indian Point Unit No. 2 (IP2) removed the insulation adjacent to each of the 58 lower head penetrations and performed a visual examination of the lower head region adjacent to each penetration including 360^0 of the annulus region between the penetration and the Alloy 600 weld pad.

(2) Extent of the Inspections

As discussed in item (1) above, each of the 58 lower RPV head penetrations were inspected including the Alloy 600 penetration, the Alloy 600 weld pad and 360^0 of the annulus between the penetration and the weld pad.

(3) Method Used

This inspection was a visual examination performed with remote video equipment and provided a resolution equivalent to the ASME Section XI VT-2 requirements as a minimum. The inspection results were reviewed by certified VT-2 personnel, meeting the requirements of ASME Section XI.

(4) Description of the As-Found Condition of the Lower Head

The above inspections identified no evidence of leakage resulting from a breach of the lower head penetrations or the attaching j-groove weld (i.e. no popcorn-like evidence of boron deposits at the annulus between the penetration and the weld pad).

Although the above inspection identified no evidence of RCS leakage resulting from a through wall defect, it identified boron residue throughout most of the surface of the lower head including the annulus region of most penetrations. This residue was characterized primarily as two-dimensional (i.e. streaks) resulting from flow of borated water from sources located above the outer most penetrations. In addition, an aging analysis was performed on boron samples removed from some penetrations. The analysis revealed no evidence of fresh RCS leakage and no evidence of Cs-134. Based on the above, it was concluded that the source of this boron residue was refueling cavity leakage during refueling operations.

(5) Findings of relevant indications of through wall leakage

The inspections performed during 2R16 identified no evidence of leakage resulting from a breach of the lower head penetrations or the attaching j-groove weld (i.e. no popcorn-like evidence of boron deposits at the annulus between the penetration and the weld pad).

(6) Summary of the disposition of any findings of boric acid deposits and any corrective actions taken as a result of indications found

As a result of the boron residue detected on the surface of the lower head, IP2 implemented cleaning of the lower head penetrations annulus regions during 2R16. However, equipment issues minimized the effectiveness of the cleaning operation. As a result, IP2 will either (a) lower the head insulation package or remove individual panels during the next (2R17) refueling outage and perform additional cleaning of the lower head surface to remove the boron residue to provide an acceptable baseline to improve the effectiveness of future visual examinations, or (b) perform non-destructive testing of the BMI penetrations during the next (2R17) refueling outage, or (c) perform some combination of (a) and (b), or (d) utilize a mutually agreed method of verification between Entergy and the NRC utilizing new technology, should such technology become available between now and the next (2R17) refueling outage. Regardless of the option chosen, all 58 penetrations will be addressed.

References

1. NRC Bulletin 2003-02, "Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity", dated August 21, 2003

2. Entergy letter to NRC dated November 13, 2003 (NL-03-178); "90-Day Response to NRC Bulletin 2003-02 Regarding Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity"

ATTACHMENT 2 TO NL-05-002

COMMITMENT FOR 2R17 IN REACTOR VESSEL LOWER HEAD INSPECTION RESULTS; INDIAN POINT 2, FALL 2004 REFUELING OUTAGE (2R16)

ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NO. 2
DOCKET NO. 50-247

COMMITMENT FOR 2R17 IN REACTOR VESSEL LOWER HEAD INSPECTION RESULTS; INDIAN POINT 2, FALL 2004 REFUELING OUTAGE (2R16)

ID	DESCRIPTION	DATE
NL-05-002-A	IP2 will either (a) lower the head insulation package or remove individual panels during the next (2R17) refueling outage and perform additional cleaning of the lower head surface to remove the boron residue to provide an acceptable baseline to improve the effectiveness of future visual examinations, or (b) perform non-destructive testing of the BMI penetrations during the next (2R17) refueling outage, or (c) perform some combination of (a) and (b), or (d) utilize a mutually agreed method of verification between Entergy and the NRC utilizing new technology, should such technology become available between now and the next (2R17) refueling outage. Regardless of the option chosen, all 58 penetrations will be addressed.	2R17